



UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER OF PATENTS AND TRADEMARKS
Washington, D.C. 20231
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/492,803	01/28/2000	Fumihiro Konushi	0020-4666P	1396

2292 7590 01/15/2002

BIRCH STEWART KOLASCH & BIRCH
PO BOX 747
FALLS CHURCH, VA 22040-0747

EXAMINER

LEUNG, QUYEN PHAN

ART UNIT PAPER NUMBER

2828

DATE MAILED: 01/15/2002

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

09/492,803

Applicant(s)

KONUSHI ET AL.

Examiner

Quyen P. Leung

Art Unit

2828

-- Th MAILING DATE of this communication app ars on th cover she t with th correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 01 November 2001.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-22 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-22 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☐ The proposed drawing correction filed on _____ is: a) ☐ approved b) ☐ disapproved by the Examiner.
If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

- 13) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
* See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).
a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449) Paper No(s) _____
- 4) ☐ Interview Summary (PTO-413) Paper No(s) _____
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: _____

DETAILED ACTION

Response to Amendment

1. In response to applicant's amendment filed 11/1/2001, claim 1 has been amended and claims 9-22 added.

Response to Arguments

2. Applicant's arguments with respect to claims 1-8 have been considered but are moot in view of the new ground(s) of rejection.

Claim Rejections - 35 USC § 112

3. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

4. Claims 17, 19 and 21 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

Claim 17 recites the limitation "said stripe-shaped ridge" in line 2. There is lack of antecedent basis for this limitation.

Claim 19 recites the limitation "a width of 4 –5 um" in line 2. It is unclear what the width should be since its parent claim, claim 17, recites a width of 2 - 3 um.

Claim 21 recites the limitation "a width of 2 – 2.5 um" in line 2. It is unclear what the width should be since its parent claim, claim 19, recites a width of 4-5 um.

5. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

6. Claims 1, 6, 9, 10, 12, 18 are rejected under 35 U.S.C. 102(b) as being anticipated by Sony (JP 10-209573 A). (See also the English language equivalent US 6,233,266 B1) Sony discloses the claimed invention. Sony teaches a semiconductor



device having a quantum well active layer **5** disposed between a pair of cladding layers

3, 10, and an optical guide layer **4, 7** disposed between at least one of the cladding

Art Unit: 2828

layers **3,10** and the quantum well active layer **5**, wherein a spacer layer **9** is provided between the optical guide layer **4,7** and said at least one of the cladding layers **3,10**.

Claim Rejections - 35 USC § 103

7. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

8. Claims 2-3, 5, 7-8, 11, 13-17, 19-21 are rejected under 35 U.S.C. 103(a) as being unpatentable over Sony as applied above. Sony has been discussed above except for (1) the optical guide layer thickness of 30 nm or 35 nm, or (2) each of the well layers having a thickness of 8 or 7 nm and each of the optical barrier layers of 5, 8 or 20 nm, or (3) a ridge width of 2-3 microns, or (4) the undoped spacer layer **9** having a thickness of 5 nm or more but below 10 nm or (5) the ratio of the feed rate between 50 to 200 inclusively or (6) the p-type cladding layer **10** having a carrier concentration range between $8 \times 10^{17} \text{ cm}^{-3}$ to $5 \times 10^{18} \text{ cm}^{-3}$. It would have been obvious to one having ordinary skill in the art at the time the invention was made to have (1) the optical guide layer thickness of 30 nm or 35 nm, or (2) each of the well layers having a thickness of 8 or 7 nm and each of the optical barrier layers of 5, 8 or 20 nm or (3) a ridge width of 2-5 microns, or (4) the undoped spacer layer **9** having a thickness of 5 nm or more but below 10 nm, or (5) the ratio of the feed rate between 50 to 200 inclusively, or (6) the p-type cladding layer **10** having a carrier concentration range between $8 \times 10^{17} \text{ cm}^{-3}$ to $5 \times 10^{18} \text{ cm}^{-3}$ since it has been held that discovering an optimum value of a result

Art Unit: 2828

effective variable involves only routine skill in the art. *In re Boesch*, 617 F.2d 272, 205 USPQ 215 (CCPA 1980).

9. Claim 4 and 22 are rejected under 35 U.S.C. 103(a) as being unpatentable over Sony in view of Ohba et al (5,034,957). Sony has been discussed above except for the spacer having a carrier concentration being more than $5 \times 10^{16} \text{ cm}^{-3}$ and less than $5 \times 10^{17} \text{ cm}^{-3}$. In col. 7 lines 22-27, Ohba et al teaches a carrier concentration of $2.5 \times 10^{17} \text{ cm}^{-3}$ in the spacer for the advantageous benefit of suppressing the diffusion of Zn into the active layer. It would have been obvious to one of ordinary skill in the art to modify Sony by employing the spacer having a carrier concentration being more than $5 \times 10^{16} \text{ cm}^{-3}$ and less than $5 \times 10^{17} \text{ cm}^{-3}$, as taught by Ohba et al, so as to gain the advantageous benefit of suppressing the diffusion of Zn into the active layer.

Conclusion

10. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Quyen P. Leung whose telephone number is (703) 308-0545. The examiner can normally be reached on 8:30-5:00, M-F.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Paul Ip can be reached on (703) 308-3098. The fax phone numbers for the organization where this application or proceeding is assigned are (703) 308-7724 for regular communications and (703) 308-7724 for After Final communications.

Application/Control Number: 09/492,803

Page 6

Art Unit: 2828

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is (703) 308-0956.



Quyen P. Leung
Primary Examiner
Art Unit 2828

QPL
January 14, 2002